TITLE: WAVELENGTH ALLOCATION METHOD OF SIGNAL LIGHT, AND OPTICAL TRANSMISSION..
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SERIAL NO.: 10/723,437
DOCKET NO.: 1344.1129

FIG.1

SUMMARY OF WAVELENGTH ALLOCATION OF SIGNAL LIGHT ACCORDING TO PRESENT INVENTION

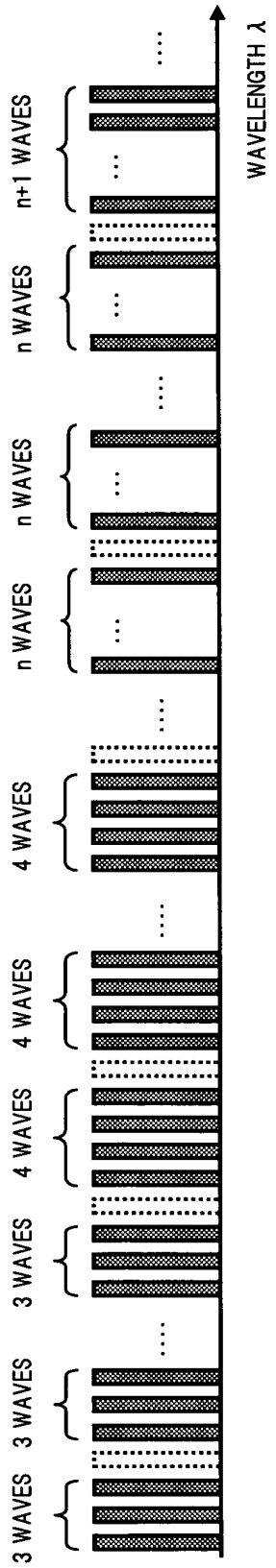


FIG.2

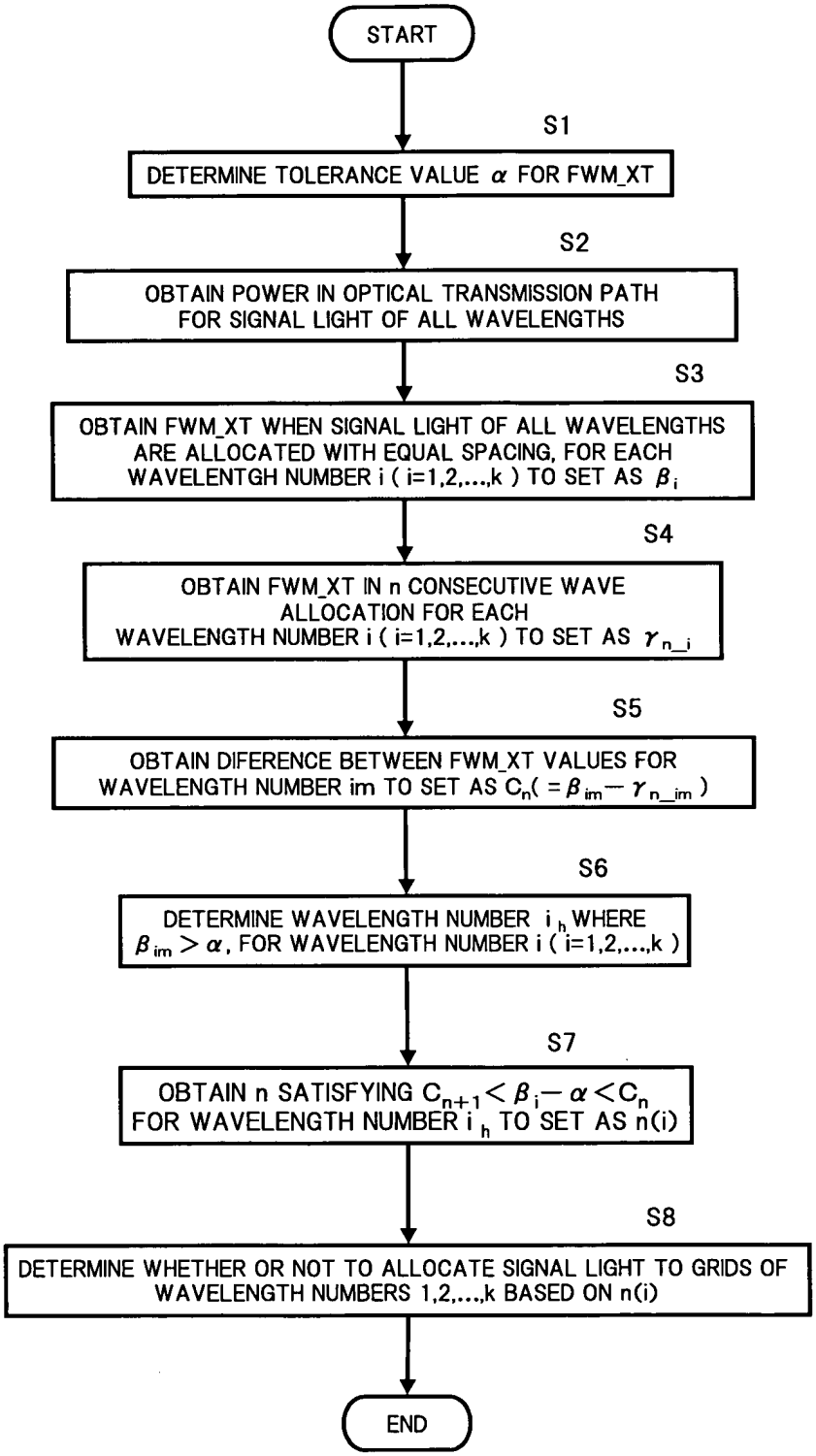

START
S1
DETERMINE TOLERANCE VALUE α FOR FWM_XT
S2
OBTAIN POWER IN OPTICAL TRANSMISSION PATH FOR SIGNAL LIGHT OF ALL WAVELENGTHS
S3
OBTAIN FWM_XT WHEN SIGNAL LIGHT OF ALL WAVELENGTHS ARE ALLOCATED WITH EQUAL SPACING, FOR EACH WAVELENTGH NUMBER i (i=1,2,...,k) TO SET AS βi
S4
OBTAIN FWM_XT IN n CONSECUTIVE WAVE ALLOCATION FOR EACH WAVELENGTH NUMBER i (i=1,2,...,k) TO SET AS γn_i
S5
OBTAIN DIFERENCE BETWEEN FWM_XT VALUES FOR WAVELENGTH NUMBER im TO SET AS Cn(=βim−γn_im)
S6
DETERMINE WAVELENGTH NUMBER ih WHERE βim > α, FOR WAVELENGTH NUMBER i (i=1,2,...,k)
S7
OBTAIN n SATISFYING Cn+1 < βi − α < Cn FOR WAVELENGTH NUMBER ih TO SET AS n(i)
S8
DETERMINE WHETHER OR NOT TO ALLOCATE SIGNAL LIGHT TO GRIDS OF WAVELENGTH NUMBERS 1,2,...,k BASED ON n(i)
END

FIG.3

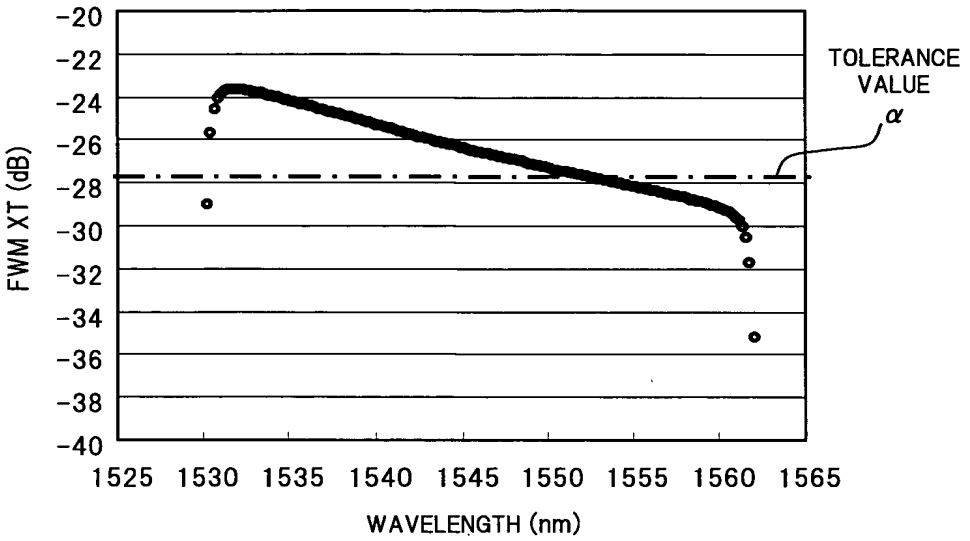

-20
-22
-24
-26
-28
-30
-32
-34
-36
-38
-40
FWM XT (dB)
1525
1530
1535
1540
1545
1550
1555
1560
1565
WAVELENGTH (nm)
TOLERANCE VALUE
α

FIG.4

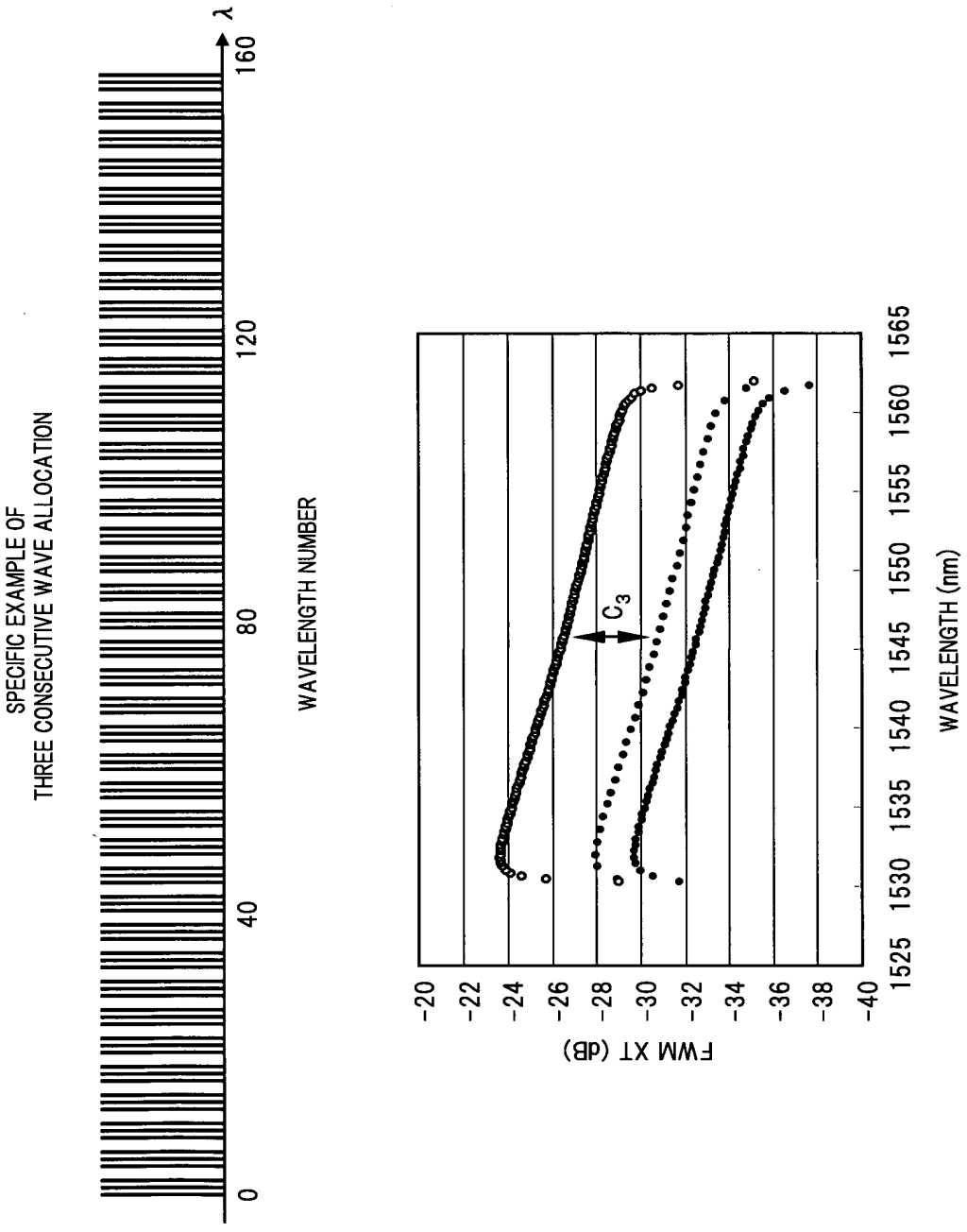

SPECIFIC EXAMPLE OF
THREE CONSECUTIVE WAVE ALLOCATION
λ
0
40
80
120
160
WAVELENGTH NUMBER
FWM XT (dB)
-20
-22
-24
-26
-28
-30
-32
-34
-36
-38
-40
C3
1525
1530
1535
1540
1545
1550
1555
1560
1565
WAVELENGTH (nm)

FIG.5

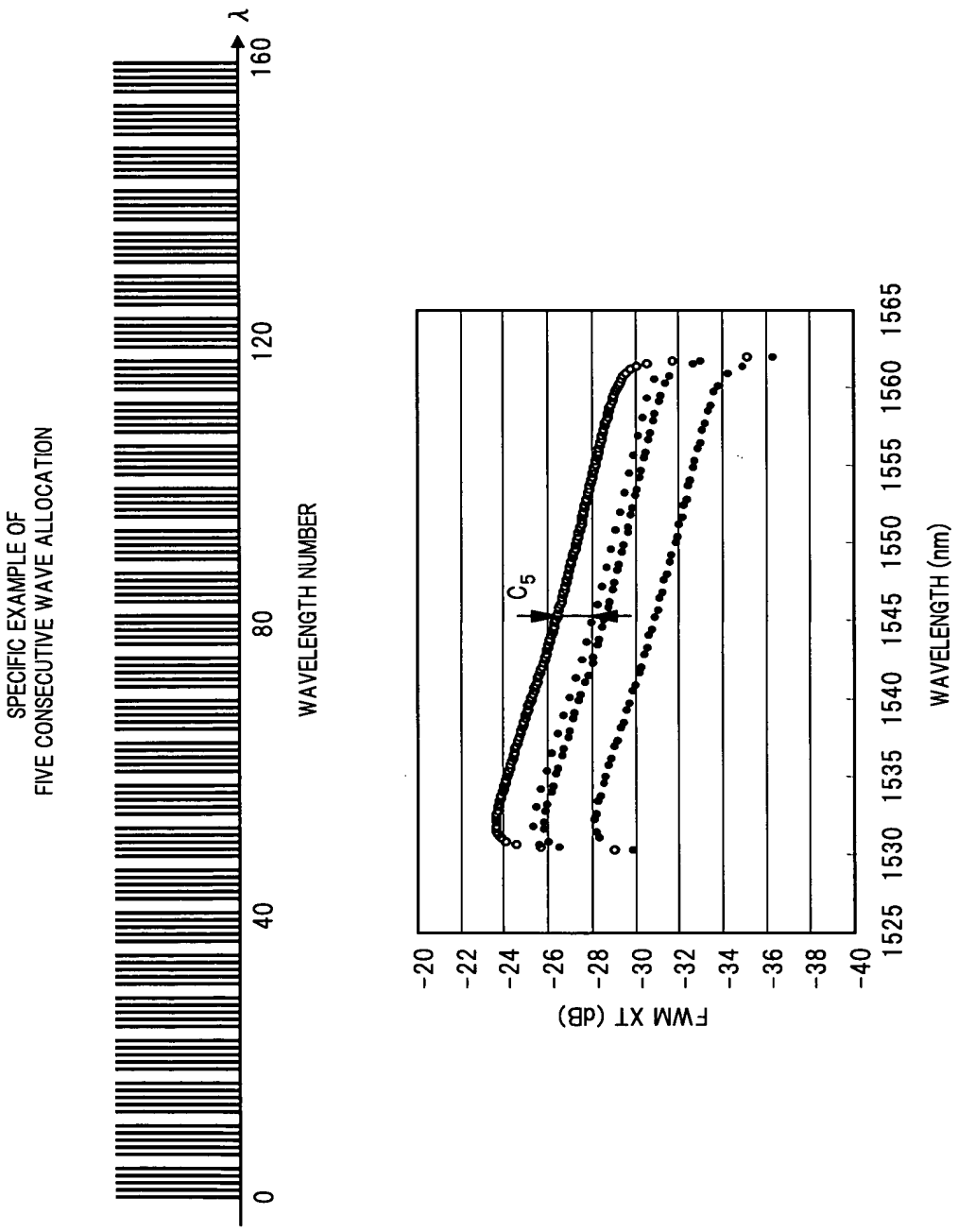

SPECIFIC EXAMPLE OF
FIVE CONSECUTIVE WAVE ALLOCATION
λ
0
40
80
120
160
WAVELENGTH NUMBER
C5
FWM XT (dB)
-20
-22
-24
-26
-28
-30
-32
-34
-36
-38
-40
1525
1530
1535
1540
1545
1550
1555
1560
1565
WAVELENGTH (nm)

FIG.6

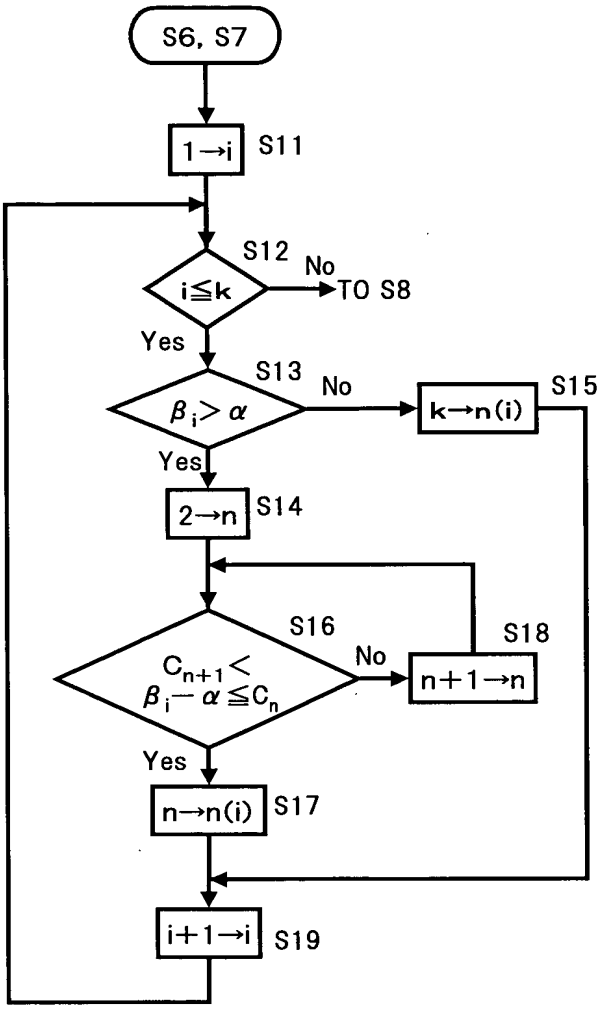

S6, S7
1→i
S11
S12
i≦k
No
TO S8
Yes
S13
$\beta_i > \alpha$
No
k→n(i)
S15
Yes
2→n
S14
S16
$C_{n+1} < \beta_i - \alpha \leqq C_n$
No
n+1→n
S18
Yes
n→n(i)
S17
i+1→i
S19

FIG.7

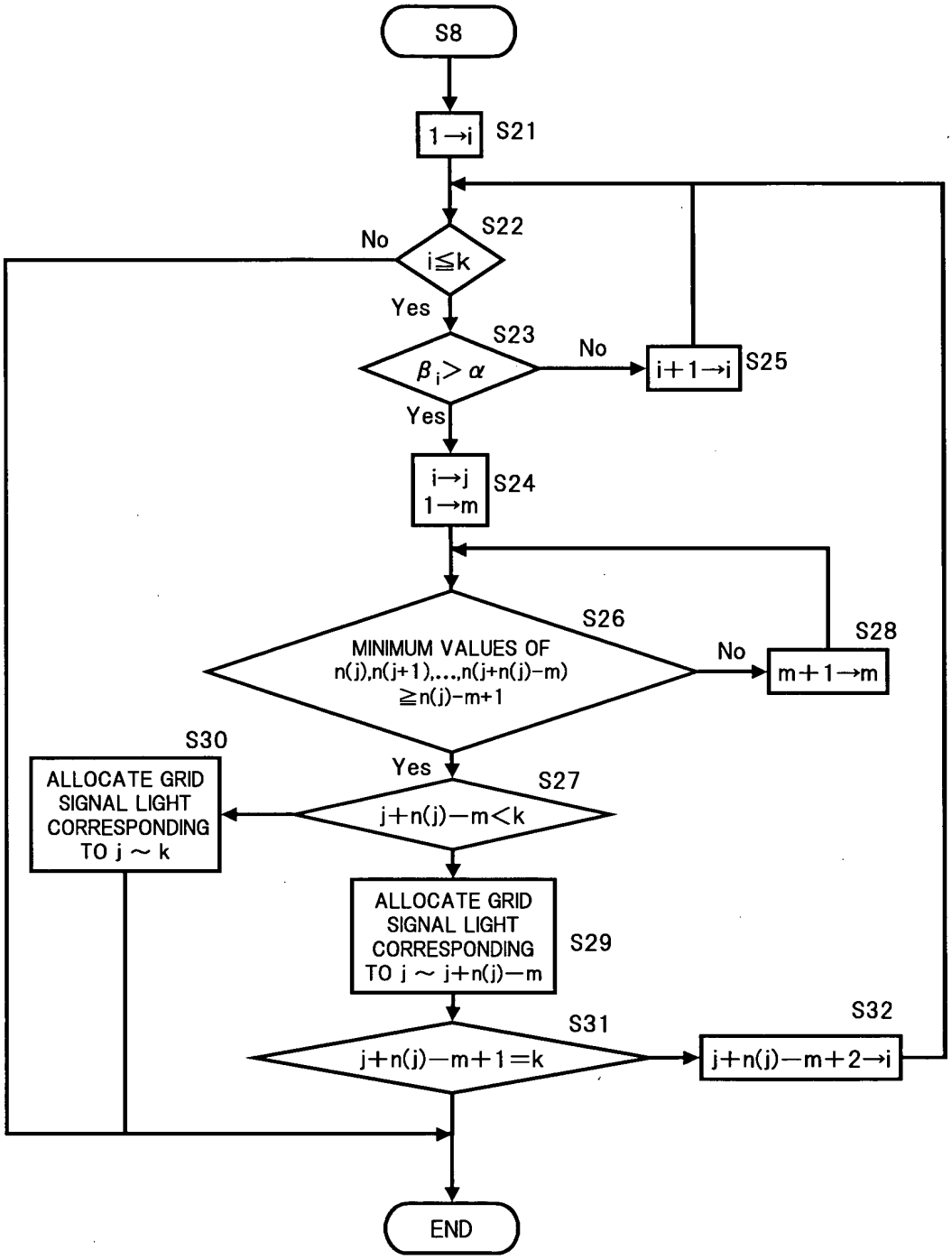

S8
1→i
S21
No
S22
i≦k
Yes
S23
$\beta_i > \alpha$
No
i+1→i
S25
Yes
i→j
1→m
S24
S26
MINIMUM VALUES OF n(j),n(j+1),...,n(j+n(j)−m) ≧n(j)−m+1
No
S28
m+1→m
S30
ALLOCATE GRID SIGNAL LIGHT CORRESPONDING TO j ～ k
Yes
S27
j+n(j)−m<k
ALLOCATE GRID SIGNAL LIGHT CORRESPONDING TO j ～ j+n(j)−m
S29
S31
j+n(j)−m+1=k
S32
j+n(j)−m+2→i
END

FIG.8

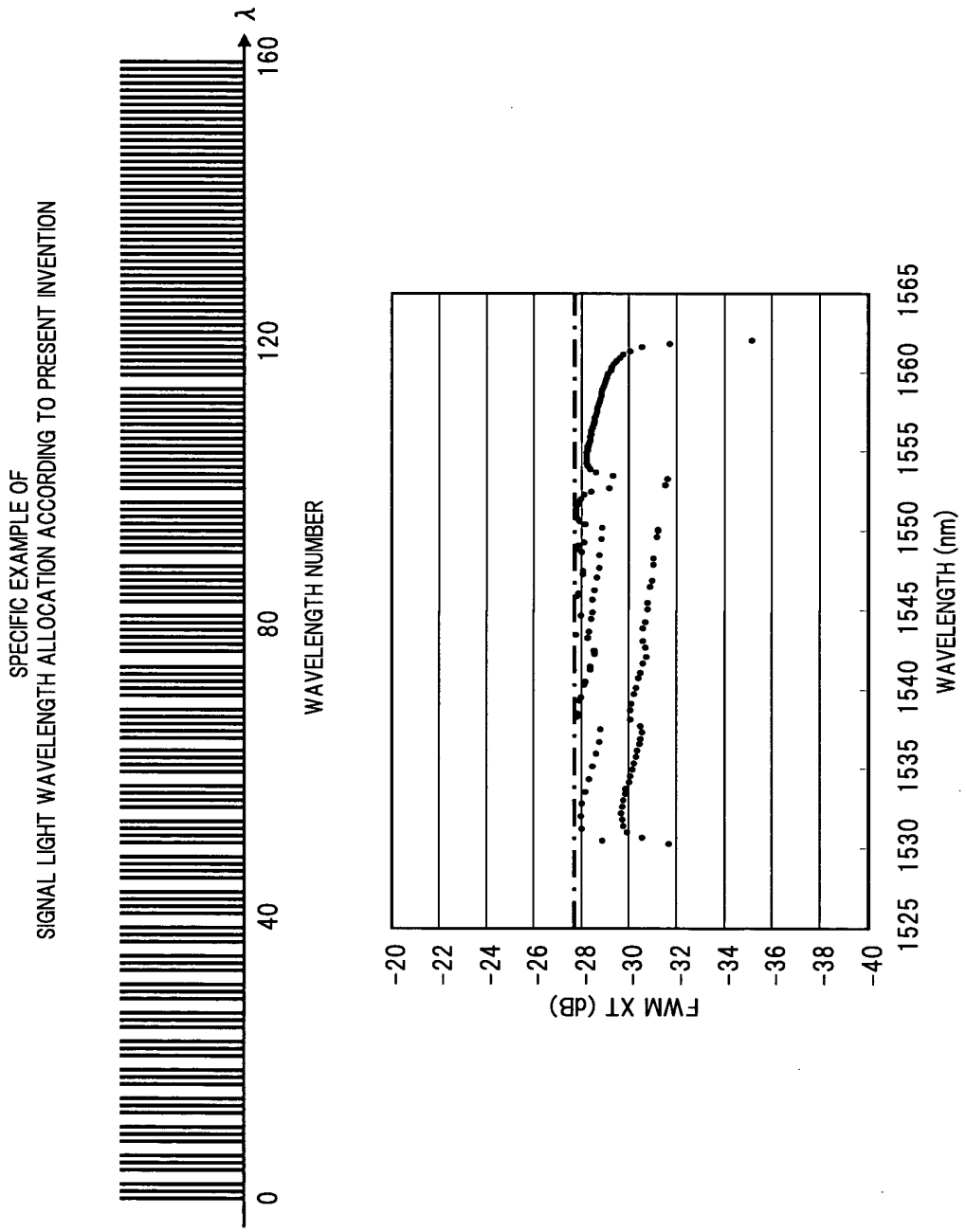

SPECIFIC EXAMPLE OF
SIGNAL LIGHT WAVELENGTH ALLOCATION ACCORDING TO PRESENT INVENTION
λ
0
40
80
120
160
WAVELENGTH NUMBER
FWM XT (dB)
-20
-22
-24
-26
-28
-30
-32
-34
-36
-38
-40
1525
1530
1535
1540
1545
1550
1555
1560
1565
WAVELENGTH (nm)

FIG.9

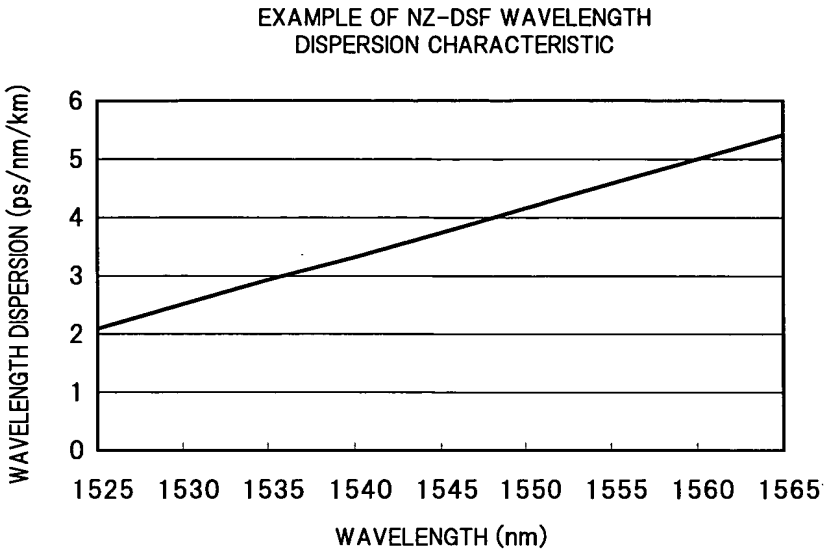
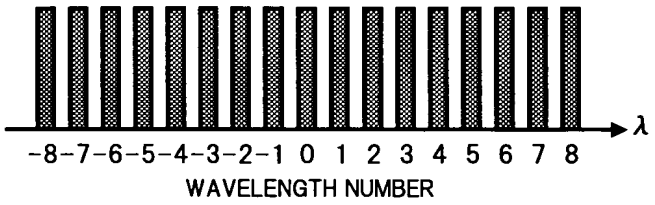
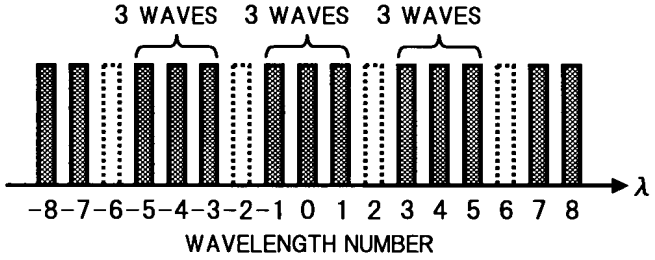

EXAMPLE OF NZ-DSF WAVELENGTH
DISPERSION CHARACTERISTIC
WAVELENGTH DISPERSION (ps/nm/km)
6
5
4
3
2
1
0
1525
1530
1535
1540
1545
1550
1555
1560
1565
WAVELENGTH (nm)

FIG.10

(A)


λ
-8 -7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8
WAVELENGTH NUMBER

(B)


3 WAVES
3 WAVES
3 WAVES
λ
-8 -7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8
WAVELENGTH NUMBER

(C)

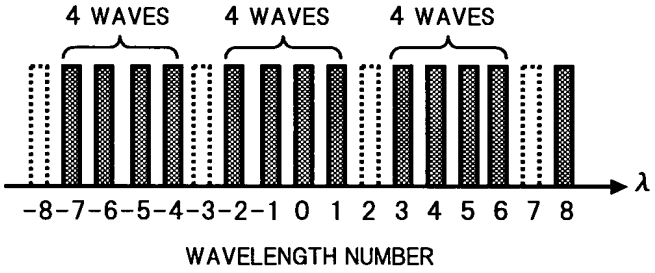

4 WAVES
4 WAVES
4 WAVES
λ
-8 -7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8
WAVELENGTH NUMBER

FIG.11

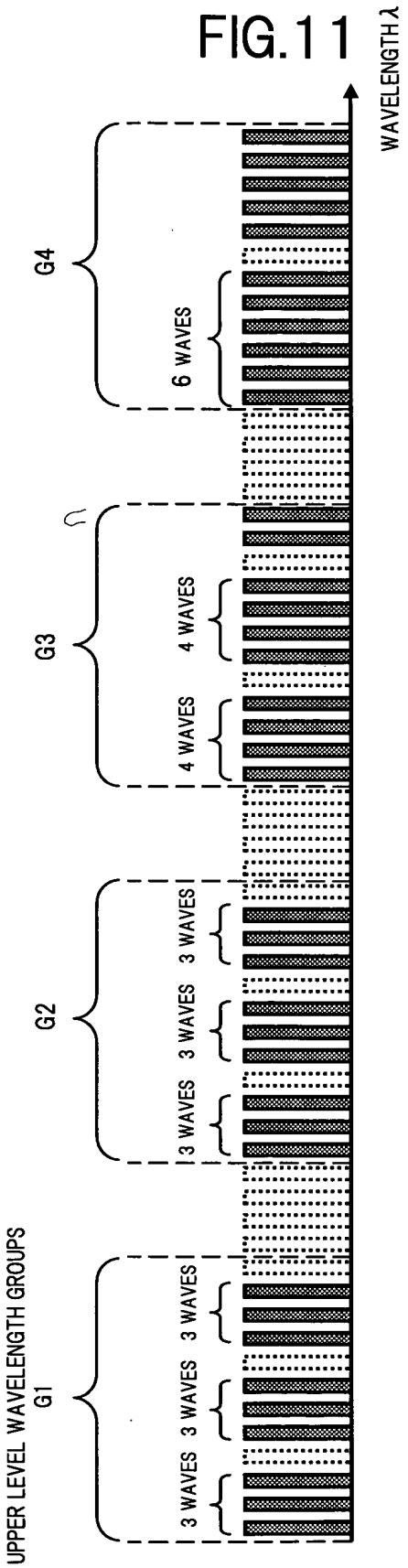

WAVELENGTH λ
UPPER LEVEL WAVELENGTH GROUPS
G1
3 WAVES
3 WAVES
3 WAVES
G2
3 WAVES
3 WAVES
3 WAVES
G3
4 WAVES
4 WAVES
G4
6 WAVES

FIG.12

EXAMPLE OF TYPICAL WDM OPTICAL TRANSMISSION SYSTEM

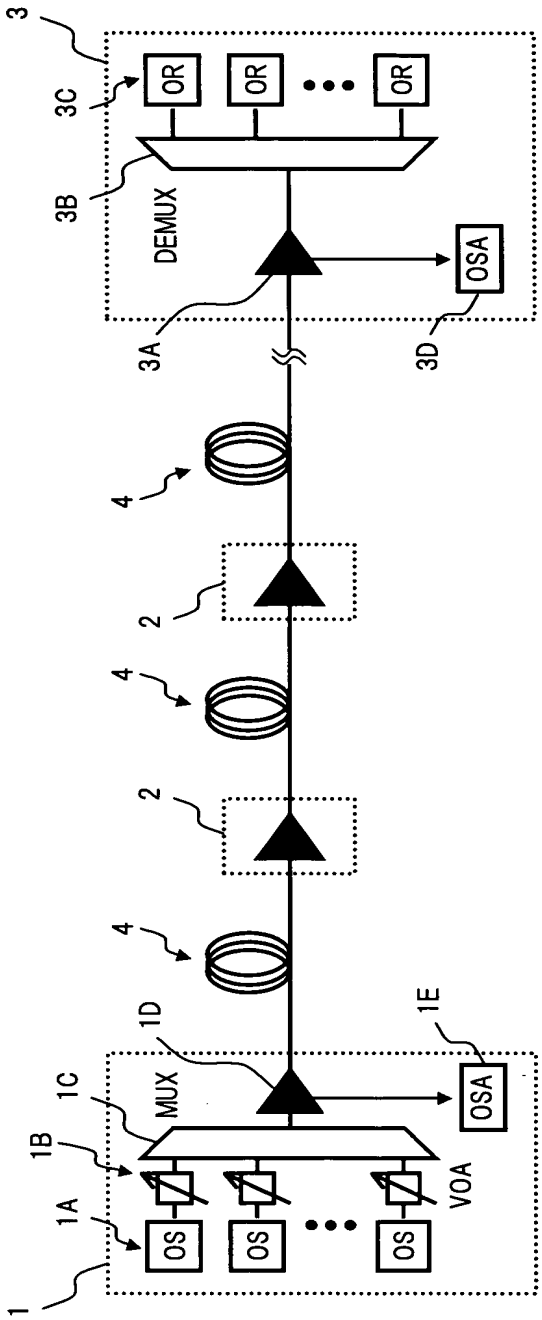
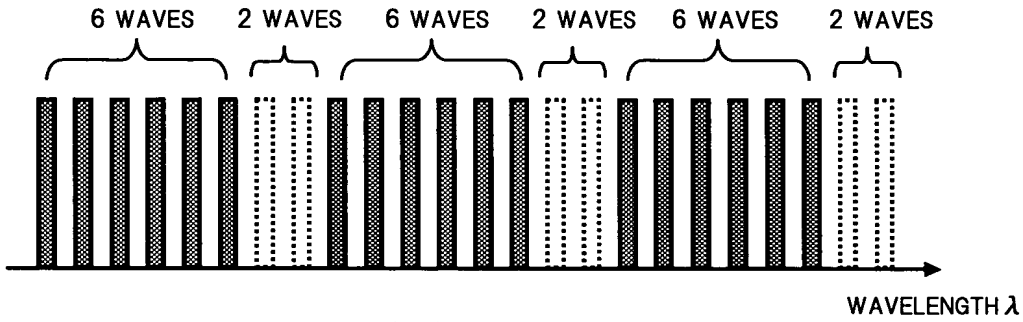


FIG.13

EXAMPLE OF CONVENTIONAL SIGNAL LIGHT WAVELENGTH ALLOCATION



(6,2)WAVELENGTH GROUPS